ARTIFICIAL INTELLIGENCE

(CSC 462)

LAB # 2



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Task 1: Merge two list and sort

```
-ò-
                                                                            Shell
main.py
                                                        Save
 1 11=[]
                                                                           Enter number of elements for list 1:4
2 12=[]
                                                                           Enter element:1
3 n1=int(input("Enter number of elements for list 1:"))
                                                                           Enter element:4
4 for i in range(1,n1+1):
                                                                           Enter element:3
       e=int(input("Enter element:"))
                                                                           Enter element:7
       11.append(e)
                                                                           Enter number of elements for list 2:5
7 n2=int(input("Enter number of elements for list 2:"))
                                                                           Enter element:8
8 for i in range(1,n2+1):
                                                                           Enter element:2
       e=int(input("Enter element:"))
                                                                           Enter element:5
       12.append(e)
                                                                           Enter element:6
11 13=11+12
                                                                           Enter element:9
                                                                           Sorted list: [1, 2, 3, 4, 5, 6, 7, 8, 9]
12 l3.sort()
13 print("Sorted list:",13)
```

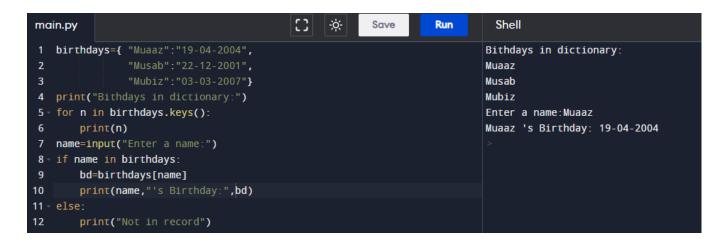
Task 2: Smallest and largest number

```
[]
main.py
1 11=[]
                                                                            Enter number of elements for list 1:3
2 12=[]
                                                                           Enter element:2
3 n1=int(input("Enter number of elements for list 1:"))
                                                                           Enter element:5
4 - for i in range(1,n1+1):
                                                                           Enter element:3
       e=int(input("Enter element:"))
                                                                           Enter number of elements for list 2:4
        11.append(e)
                                                                           Enter element:6
 7 n2=int(input("Enter number of elements for list 2:"))
                                                                           Enter element:1
8 for i in range(1,n2+1):
                                                                           Enter element:4
       e=int(input("Enter element:"))
                                                                           Enter element:7
       12.append(e)
                                                                           Sorted list: [1, 2, 3, 4, 5, 6, 7]
11 13=11+12
                                                                           Smallest element: 1
                                                                           Largest element: 7
12 13.sort()
13 print("Sorted list:",13)
14 print("Smallest element:",min(l3))
```

Task 3: Derivative

```
Shell
main.py
                                                            Save
                                                                       Run
                                                                                                                                                         Clear
1 from math import sin,cos,pi
                                                                                f(x) = \{-2.999\} f(x) = \{-0.9897796616854526\} cos(x) = \{-0.9898508816196986\}
2 h=0.001
                                                                                It is close to cos(x)
   xlist=[i+h for i in range (int(-pi),int(pi))]
                                                                                f(x) = \{-1.999\} f(x) = \{-0.4147824054706595\} \cos(x) = \{-0.41523733119846545\}
   for i in xlist:
                                                                                It is close to cos(x)
                                                                                f(x) = \{-0.999\} f(x) = \{0.5415638814669776\} \cos(x) = \{0.5411435065615721\}
       dev=(sin(i+h)-sin(i))/h
       cos_x=cos(i)
                                                                                It is close to cos(x)
        print('f(x)=',{i},'f(x)=',{dev},'cos(x)=',{cos_x})
                                                                                f(x) = \{0.001\} f(x) = \{0.9999988333335915\} \cos(x) = \{0.9999995000000417\}
       if abs(dev-cos_x)<h:</pre>
                                                                                It is close to cos(x)
           print("It is close to cos(x)")
                                                                                f(x) = \{1.001\} f(x) = \{0.5390394695642398\} \cos(x) = \{0.5394605648724466\}
                                                                                It is close to cos(x)
            print("It is not close to cos(x)")
                                                                                f(x)=\{2.001\}\ f(x)=\{-0.4175102966144095\}\ \cos(x)=\{-0.41705592574901745\}
                                                                                It is close to cos(x)
```

Task 4: Birthdays



Task 5: Dictionary